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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,452	09/26/2006	Ulf Bjorkman	69993-236346	9258

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EXAMINER	
CARLOS, ALVIN LEABRES	

ART UNIT	PAPER NUMBER
3715	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/594,452	BJORKMAN ET AL.	
	Examiner	Art Unit	
	ALVIN CARLOS	3715	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 June 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-27* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-27* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *11 July 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The following is a Final Office action in response to communications received June 29, 2011. Claims 1-27 are now pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robertsson 4218834 in view of Varshneya 6386879.

Re claim 1, Robertsson discloses a weapon effect simulation system comprising a weapon 4 (see figure 1), comprising a fire simulation system comprising a transmitter 2 configured to transmit electromagnetic waves from a weapon to simulate real ammunition from the weapon and the transmitter including information in the electromagnetic waves (column 6 lines 52-67), and a calculating unit configured to calculate an imagined trajectory of the simulated ammunition (column 8 lines 19-35), and transmitter is operative to include in the electromagnetic waves information related to coordinates in the three-dimensional space for the calculated ammunition trajectory (column 13 lines 39-51), and at least one target comprising a hit simulation system comprising a receiver 29 configured to receive the transmitted electromagnetic waves (column 14 lines 28-41), and a processor configured to determine whether a target has been hit based on the information related to coordinates in the three-dimensional space

for the calculated ammunition trajectory in the received electromagnetic waves (column 9 lines 31-44 and column 15 lines 1-15).

Robertsson discloses situation measurement transducer 20 (fig. 3) that takes account of the position and state of motion of the weapon may be supplied from gyro and accelerometer means or from radio position and direction finding means or the like, which outputs are fed to the relative position calculator 23 (column 11 lines 56-65).

Robertsson discloses all of the claimed subject matter as discussed above with the exception of disclosing the feature of a processor configured to determine a geographical position of the weapon.

However, Varshneya teaches utilizing a GPS to determine the weapon's location, target's location, range of the weapon location to the target location and ammunition trajectory relative to the geographical position of the weapon and the target, hit scoring result (column 2 lines 55-67 - column 3 lines 1-14 and column 4 lines 15-57).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Robertsson's weapon position detector by substituting Varshneya's teaching of utilizing a GPS to determine the weapon's location, target's location, range of the weapon location to the target location and ammunition trajectory relative to the geographical position of the weapon and the target, hit scoring result in order to provide a more precise gunnery training system that takes advantage of GPS locators that has improved capabilities and flexibilities to further enhance the realism of the tank gunnery training exercise in complex tactical situations.

Re claim 2, Robertsson in view of Varshneya all of the claimed subject matter as discussed above. In addition, Robertsson discloses the transmitter comprising a laser transmitter 2 operative to transmit laser radiation with at least one beam lobe (column 6 lines 52-55).

Re claims 3 and 5, Robertsson discloses all of the claimed subject matter as discussed above with the exception of disclosing the feature of a radio transmitter operative to transmit radio waves.

However, Varshneya teaches the transmitter comprising a radio transmitter operative to transmit radio waves (column 3 lines 4-14).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Robertsson's transmitter by substituting Varshneya's teaching of utilizing a radio wave in order to provide a more precise gunnery training system that has improved capabilities and flexibilities to further enhance the realism of the tank gunnery training exercise in complex tactical situations.

Re claim 4, Robertsson discloses all of the claimed subject matter as discussed above with the exception of disclosing the feature of the processor is operative to determine target hits based primarily on the information in the laser radiation and secondarily on the information in the radio waves.

However, Varshneya teaches the processor is operative to determine target hits based primarily on the information in the laser radiation and secondarily on the information in the radio waves (column 2 lines 55-67 and column 3 lines 1-14).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Robertsson's training system by substituting Varshneya's teaching of utilizing both laser radiation and radio wave in order to provide a more precise gunnery training system that has improved capabilities and flexibilities to further enhance the realism of the tank gunnery training exercise in complex tactical situations.

Re claim 6, Robertsson in view of Varshneya all of the claimed subject matter as discussed above. In addition, Robertsson discloses the transmitter is operative to continuously include, based on the calculated trajectory, information concerning the current trajectory position of the simulated ammunition (column 8 lines 19-33).

Re claim 7, Robertsson in view of Varshneya all of the claimed subject matter as discussed above. In addition, Robertsson discloses the processor is operative to including information concerning the trajectory positions of the simulated ammunition during a period of time that is shorter than the flight time of the real ammunition and based on the calculated trajectory (column 12 lines 5-39).

Re claim 8, Robertsson in view of Varshneya all of the claimed subject matter as discussed above. In addition, Robertsson discloses the calculating unit is operative to determine an impact point or burst point of the ammunition, and the information related to the calculated ammunition trajectory contains the impact point or burst point (column 12 lines 5-39).

Re claims 9-11 and 13, Robertsson discloses (claim 9) fire simulation system comprising a transmitter operative to transmit information regarding the position of the weapon (column 11 lines 56-65), at least one of the target comprising a hit simulation

systems comprising a receiver operative to receive said position data and (claim 10) information related to the calculated ammunition trajectory is determined relative to the position of the weapon (column 13 lines 22-62);

Robertsson discloses all of the claimed subject matter as discussed above with the exception of disclosing the feature of transmitter operative to transmit information regarding the geographical position of the weapon, (claim 10) information related to the calculated ammunition trajectory is determined relative to the geographical position of the weapon; (claim 11) a processor configured to determine the geographical position of the target; (claim 13) the transmitter of the hit simulation system is operative to transmit information regarding the geographical position of the target; (claim 22) the processor has a geographical position that is separate from the geographical position of the transmitter.

However, Varshneya teaches utilizing a GPS to determine the weapon's location, target's location, range of the weapon location to the target location and ammunition trajectory relative to the geographical position of the weapon and the target, hit scoring result (column 2 lines 55-67 - column 3 lines 1-14 and column 4 lines 15-57).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Robertsson's scoring system utilizing sweeping fan-shaped beams by substituting Varshneya's teaching of utilizing a GPS to determine the weapon's location, target's location, range of the weapon location to the target location and ammunition trajectory relative to the geographical position of the weapon and the target, hit scoring result in order to provide a more precise gunnery training system that

takes advantage of GPS locators that has improved capabilities and flexibilities to further enhance the realism of the tank gunnery training exercise in complex tactical situations.

However, Varshneya teaches utilizing a GPS to determine the weapon's location, target's location, range of the weapon location to the target location and ammunition trajectory relative to the geographical position of the weapon and the target (column 2 lines 55-67 - column 3 lines 1-14 and column 4 lines 15-57).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Robertsson's transmitter by substituting Varshneya's teaching of utilizing a GPS to determine the weapon's location, target's location, range of the weapon location to the target location and ammunition trajectory relative to the geographical position of the weapon and the target, hit scoring result in order to provide a more precise gunnery training system that takes advantage of GPS locators that has improved capabilities and flexibilities to further enhance the realism of the tank gunnery training exercise in complex tactical situations.

Re claim 12, Robertsson in view of Varshneya all of the claimed subject matter as discussed above. In addition, Robertsson discloses at least one of the targets comprising a hit system comprising a transmitter (column 6 lines 42-51), and wherein the fire simulation system comprises a receiver operative to receive information from the transmitter of the hit simulation system (column 13 lines 22-62).

Re claim 14, Robertsson in view of Varshneya all of the claimed subject matter as discussed above. In addition, Robertsson discloses the calculating unit is operative

to determine which target has been hit, and information related to the calculated ammunition trajectory includes information that identifies the determined target (column 15 lines 43-60).

Re claim 15, Robertsson in view of Varshneya all of the claimed subject matter as discussed above. In addition, Robertsson discloses the transmitter of the hit simulation system is operative to transmit a hit message upon determination of a hit (column 15 lines 16-42).

Re claim 16, Robertsson in view of Varshneya all of the claimed subject matter as discussed above. In addition, Robertsson discloses a receiver for a hit simulation system that has not determined a hit act as a secondary object and is operative to receive the transmitted hit message (column 15 lines 16-42).

Re claim 17, Robertsson in view of Varshneya all of the claimed subject matter as discussed above. In addition, Robertsson discloses the processor is operative to decide upon receiving hit messages whether the secondary object has been hit (column 15 lines 16-42).

Re claim 18, Robertsson in view of Varshneya all of the claimed subject matter as discussed above. In addition, Robertsson discloses the transmitter is operatively connected with the receiver of the fire simulation system and is operative to break off the simulation upon receiving the hit message (column 15 lines 16-42).

Re claim 19, Robertsson in view of Varshneya all of the claimed subject matter as discussed above. In addition, Robertsson discloses the fire simulation system

comprising a display configured to display hit locations and effects based on received hit messages (column 15 lines 16-42).

Re claim 20, Robertsson in view of Varshneya all of the claimed subject matter as discussed above. In addition, Robertsson discloses the display is operative to display hit locations and effects visually (column 15 lines 16-42).

Re claim 21, Robertsson in view of Varshneya all of the claimed subject matter as discussed above. In addition, Robertsson discloses the fire simulation system is disposed at a weapon (column 6 lines 30-36).

Re claim 23, Robertsson in view of Varshneya all of the claimed subject matter as discussed above. In addition, Robertsson discloses hit simulation system is disposed in connection with a respective target (column 6 lines 37-42).

Re claim 24, Robertsson in view of Varshneya all of the claimed subject matter as discussed above. In addition, Robertsson discloses the processor is operative to determine a hit location on the target (column 14 lines 42-66).

Re claim 25, Robertsson in view of Varshneya all of the claimed subject matter as discussed above. In addition, Robertsson discloses wherein the processor is operatively connected with the transmitter of the fire simulation system and operative to break off the simulation if a hit is determined corresponding to damage or injury that renders continued firing impossible (column 15 lines 16-42).

Re claim 26, Robertsson discloses a fire simulation system for weapon effect simulation systems (see figure 1), comprising a transmitter 2 arranged with the weapon and configured to transmit electromagnetic waves for simulating ammunition from a

weapon (column 6 lines 52-67), and for including information in the electromagnetic waves operative to include information related to coordinates in the three-dimensional space for the calculated ammunition trajectory (column 13 lines 22-62), a calculating unit arranged with the weapon and configured to calculate the imagined trajectory of the ammunition (column 8 lines 19-35).

Robertsson discloses situation measurement transducer 20 (fig. 3) that takes account of the position and state of motion of the weapon may be supplied from gyro and accelerometer means or from radio position and direction finding means or the like, which outputs are fed to the relative position calculator 23 (column 11 lines 56-65).

Robertsson discloses all of the claimed subject matter as discussed above with the exception of disclosing the feature of arranged with the weapon and configured to determine the geographical position of the weapon.

However, Varshneya teaches utilizing a GPS to determine the weapon's location, target's location, range of the weapon location to the target location and ammunition trajectory relative to the geographical position of the weapon and the target, hit scoring result (column 2 lines 55-67 - column 3 lines 1-14 and column 4 lines 15-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Robertsson's weapon position detector by substituting Varshneya's teaching of utilizing a GPS to determine the weapon's location, target's location, range of the weapon location to the target location and ammunition trajectory relative to the geographical position of the weapon and the target, hit scoring result in order to provide a more precise gunnery training system that takes advantage of GPS

locators that has improved capabilities and flexibilities to further enhance the realism of the tank gunnery training exercise in complex tactical situations.

Re claim 27, Robertsson discloses a method for simulating the effect of a weapon on one or more potential targets comprising calculating with the weapon the imagined trajectory of the simulated ammunition (column 8 lines 19-35), modulating with information electromagnetic waves for simulating ammunition from the weapon (column 13 lines 63-67), information related to coordinates in the three-dimensional space for the calculated ammunition trajectory and transmitting from the weapon the modulated electromagnetic waves for reception by the potential targets (column 13 lines 22-62), making a determination with the targets upon reception of the electromagnetic waves for each respective target as to whether the target has been hit, based on the information related to coordinates in the three-dimensional space for the calculated ammunition trajectory in the received electromagnetic waves (column 9 lines 31-44 and column 15 lines 1-15).

Response to Arguments

4. Applicant's arguments filed 06/29/2011 have been fully considered but they are not persuasive.

5. In response to the applicant's argument that Robertsson does not disclose "electromagnetic waves information related to coordinates in the three-dimensional space for the calculated ammunition trajectory", Examine disagrees. Robertsson discloses information is encoded on the beam that includes relationship between the momentary angular position of the beam and the hypothetical projectile position that are

analogous to calculating ammunition trajectory. Furthermore, such information carried by the beam are received and available at the target body (column 13 lines 39-51), wherein the information encoded on the beam are decoded by the receiver at the target location (column 14 lines 28-41).

6. In response to the applicant's argument that Varshneya does not disclose "at least one target including a hit simulation system including a receiver configured to receive the transmitted electromagnetic waves from the weapon and a processor configured to determine whether a target has been hit based on the information related to coordinates in the three-dimensional space for the calculated ammunition trajectory in the received electromagnetic waves", Examiner note that such feature is disclosed by Robertsson as discussed above. In addition, Varshneya is used to teach utilizing a GPS to determine the weapon's location, target's location, range of the weapon location to the target location and ammunition trajectory relative to the geographical position of the weapon and the target, hit scoring result (column 2 lines 55-67 - column 3 lines 1-14 and column 4 lines 15-57). In addition, Varshneya teaches the calculating unit at the target configured to calculate an imagined trajectory of the simulated ammunition. Varshneya teaches a target system that determines an impact point for the ammunition, as described at, for example, col. 2, lines 16-19 and 11-14. As described at col. 4, lines 58-62, the impact point is determined by running a ballistic simulation of the ammunition trajectory, the calculation is performed at the target weapon system, the calculating unit at the target configured to calculate an imagined trajectory of the simulated ammunition. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

invention to modify Robertsson's weapon position detector by substituting Varshneya's teaching of utilizing a GPS in order to provide a more precise gunnery training system that takes advantage of GPS locators that has improved capabilities and flexibilities to further enhance the tank gunnery training exercise in any geographical training field and any complex tactical situations.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALVIN CARLOS whose telephone number is (571)270-3077. The examiner can normally be reached on 7:30am-5:00pm EST Mon-Fri (alternate Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xuan Thai can be reached on (571)272-7147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A.C./
Examiner, Art Unit 3715
September 28, 2011

/XUAN M. THAI/
Supervisory Patent Examiner, Art Unit 3715